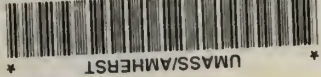


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Solid Waste Disposal In
Massachusetts

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Recent newspaper accounts of a "landfill crisis" in Eastern Massachusetts have people wondering how we dispose of the 6-7 million tons of solid waste generated yearly in this state.¹ Most refuse is picked up and brought directly to the landfill, incinerator, or waste-to-energy plant. But if the community is located far from the disposal facility, the waste may be brought to a transfer-haul station first. At the transfer-haul station, loads from smaller refuse trucks are combined onto larger trucks that can transport the waste more economically to a facility.

Landfilling is the most common method of disposal. There are 203 active landfills in Massachusetts (180 public, 23 private).² They basically operate the same way; compacting the solid waste in layers and then covering it with soil. An estimated 95% of all the solid waste produced in Massachusetts is landfilled.³

Landfills contain residential, commercial, and industrial solid wastes. In general, these wastes are called solid waste; but, since most of it is collected from communities, it is often called "municipal solid waste." Some solid wastes, like industrial ash, sewage solids (sludge), and asbestos are "special wastes" that require prior permission to be landfilled.⁴

¹The Commonwealth of Massachusetts Department of Environmental Quality Engineering. Regulations For The Disposal of Solid Waste By Sanitary Landfill, Public Discussion Draft. p. 1.

²The Commonwealth of Massachusetts Department of Environmental Management Bureau of Solid Waste Disposal. "Massachusetts Solid Waste Management Summary Sheet." p. 35.

³Ibid.

⁴The Commonwealth of Massachusetts Department of Environmental Quality Engineering. Regulations For The Disposal of Solid Waste, (310 CMR 19:16 Special Waste.)

Although state regulations prohibit the landfilling of hazardous wastes,⁵ some solid wastes already in landfills are hazardous. Until the 1970's the state made no distinction between hazardous and solid wastes and, most landfills legally accepted hazardous wastes. According to Mr. Pease of the Massachusetts Department of Environmental Management (DEM), Bureau of Solid Waste, several landfills have become hazardous waste Superfund sites.

Small quantities of hazardous waste are still landfilled because they are exempted from the state hazardous waste regulations. If a person generates less than 20 kilograms (almost 45 pounds) of hazardous waste per month, that waste can be landfilled as a special waste.⁶

Under the Massachusetts General Law Chapter 111, Section 150A, the local board of health must first approve the site for any proposed landfill. The landfill design and operation plans are then sent to the State's Department of Environmental Quality Engineering (DEQE) for approval. DEQE then enforces the State Sanitary Landfill Regulations (310 CMR 19.00). These regulations were adopted in 1971 to protect public health by minimizing water and air pollution. Open dumps were converted to sanitary landfills by prohibiting burning at landfills, requiring daily covers over refuse, and preventing them from being located in wetlands or flood areas.

⁵The Commonwealth of Massachusetts Department of Environmental Quality Engineering. Hazardous Waste Regulations, (310 CMR 30.361: Wastes Unacceptable for Landfilling,) (310 CMR 30.120: Characteristics of Hazardous Waste,) (310 CMR 30.130: Lists of Hazardous Waste.)

⁶Ibid. (310 CMR 30.350: Special Generator Requirements.)

However, according to Ms. Nessen of DEQE and Mr. Pease of DEM's Bureau of Solid Waste, 70% of all operating landfills in Massachusetts violate the 1971 regulations. In fact, Ms. Nessen adds, "the landfill design and operation plans of approximately thirty landfills have not even been sent to DEQE yet."

Why are landfills, in violation of the regulations, still operating? According to DEM and DEQE, there are two reasons. One, there is a lack of money to clean up bad landfills; and two, there is a landfill capacity problem. Ms. Baker of DEM explains, "Most of the money available for solid waste disposal is to start waste-to-energy plants; however, in fiscal year 1986, there will be EPA money to clean up landfills that pollute groundwater." DEM estimates that 150 of today's landfills will fill to capacity within five years, leaving the state with a diminished capacity for waste disposal. So, until there are alternatives, DEQE does not usually prosecute violators.

Even landfills that comply with the regulations can harm the environment. If rain seeps through the landfill picking up contaminants, it becomes leachate and can pollute groundwater. Also, the underground decomposition of waste in landfills gives off a methane gas that can explode when it accumulates.

DEQE has drafted revised regulations in order to meet the landfill criteria of the Federal Resource Conservation and Recovery Act. These regulations would require linings, groundwater monitoring wells, and methane gas control at landfills. Though they are only in draft form, the revised regulations are used by DEQE as policy guidelines for new landfill developments or expansions.

Alternatives to landfills reduce the volume of solid waste which must be landfilled. They include burning the solid waste and separating some of it for

recycling. Experts say 25% of the waste can be recycled and 60% of it can be burned and reduced to 20% of its original weight.

In Massachusetts, solid waste is burned at two types of facilities: waste-to-energy plants (often called resource recovery facilities) and municipal incinerators. Saugus, Pittsfield, and Lawrence have privately owned waste-to-energy plants while Framingham and Fall River have municipal incinerators. At one time, there were more municipal incinerators; but, due to air pollution problems, they have closed.

At the Refuse Energy Systems Company (Resco) plant in Saugus and the Vicon plant in Pittsfield, unprepared municipal solid waste is burned to produce steam. Resco burns approximately 1176 tons of refuse per day in two 750 tons per day (TPD) boilers and produces 370,000 pounds of steam per hour. Vicon is smaller, burning approximately 187 tons of refuse per day in two 120 TPD boilers and producing 35,000 pounds of steam per hour.

Operations at these two waste-to-energy plants are basically the same. First, refuse trucks dump municipal solid waste into large storage pits at the facilities. Then, cranes keep hoppers continually fed. As the refuse drops down the chute, it enters a furnace where it combusts with hot air. Here, heat radiates against the furnace walls which are lined with metal pipes filled with water. The water boils and produces steam which is then sold to nearby industries. Resco plans to add a steam turbine so it can also sell electricity.

The Refuse Fuels Associates plant in Lawrence is similar except it burns a refuse derived fuel (RDF). This RDF is municipal solid waste that is first

Framingham burns approximately 200 tons of refuse per day while Fall River burns approximately 240 tons per day. Both incinerators each have two furnaces but use only one because of their limited air pollution control.

The combustion at waste-to-energy plants and municipal incinerators produces gases and ashes. The gases which contain particulate called fly ash pass through air pollution control equipment before leaving the smoke stack while the heavier bottom ashes move along a traveling grate to a quench tank before being trucked to a landfill. There is controversy over the toxicity of air emissions and ashes. According to Don Squires of DEQE's Division of Air Quality Control, the emissions are tested for particulates, hydrochloric acid, and carbon monoxide. In Massachusetts, ash is not presently considered a hazardous waste, but pending legislation would classify it as one.⁸

While burning reduces the amount of refuse that must be landfilled, recycling reduces the amount of waste that must be burned or landfilled.

Current recycling programs in Massachusetts consist of minor separation at landfills, collection drives and municipal projects. According to Ms. Miley, the Recycling Program Director at the Bureau of Solid Waste, these programs are inadequate and need improvement. Recycling programs are affected by the depressed market conditions for recyclable materials. Ms. Miley suggests giving tax incentives to people who purchase recycled goods to increase the demand for recyclable materials and encourage recycling.

The ideal route for solid waste disposal would combine recycling, resource recovery,

⁸House bill 1811 of the 1984 Legislative Session

shredded at a Haverhill facility. Up to 1,300 tons of refuse per day can be shredded and then burned to produce steam and electricity.⁷

Will additional waste-to-energy plants operate in Massachusetts? Yes, five plants, that are in the planning stages, may be located in Boston, Springfield, Worcester, Holyoke, and Rochester; while in North Andover, another Resco plant is under construction. The North Andover plant is expected to operate in 1986. Most of the plants will burn unprepared waste to produce electricity.

Building a waste-to-energy plant takes seven to ten years according to Mr. Pease. The project needs financing and a committed supply of waste. If the plant does not have an ensured waste supply, there is no guarantee it will have enough fuel to run efficiently. The Bureau of Solid Waste has assisted communities in forming regional bodies that commit their waste to a project. Financing usually occurs through Federal Grants and Massachusetts Industrial Revenue Bonds. The bonds are granted by the Massachusetts Industrial Finance Agency but are financed by banks or other finance institutions. Because the process of planning and financing takes so long, waste-to-energy plants can only solve our waste disposal capacity problem in the long run.

At the municipal incinerators, refuse is burned in furnaces without boilers to recover energy. Private companies have proposed adding resource recovery equipment to the Framingham incinerator but nothing has yet materialized.

⁷ Jerry Ackerman, "Making Energy From Our Trash." The Boston Globe, 11 June 1984, p. 43.

and landfills. Ms. Gardner of the of Bureau of Solid Waste Disposal, says that for optimum waste disposal, "first everything in the waste stream that could be recycled should be separated. Then, the waste remaining after separation should be burned at the waste-to-energy plants. Only the ash and anything that could not burn would be landfilled."

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REPORT

THE BOARD OF DIRECTORS OF THE COMPANY

FOR THE YEAR ENDING 31st DECEMBER 1900

AND THE STATE OF THE AFFAIRS OF THE COMPANY

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